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RESEARCH DESIGN FOR THE HISTORIC ARCHEOLOGICAL  
EXAMINATION OF AN AMERICAN CIVIL WAR HARBOR  
DEFENSE TEMPORARY FORTIFICATION AT BLACK POINT  
FORT MASON, GOLDEN GATE NATIONAL RECREATION  
AREA, SAN FRANCISCO, CALIFORNIA

James P. Delgado

Division of Resource Management and Planning  
Golden Gate National Recreation Area  
National Park Service  
United States Department of the Interior

July 1983

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## 1. Background Information

### Abstract

This Research Design was prepared to define and guide archaeological research activities during the excavation of the Black Point Battery, an 1864 temporary harbor defense battery located at Fort Mason, a unit of the Golden Gate National Recreation Area. This research design poses theoretical questions of a particular and general nature which will hopefully be answered during the project; additionally, the research design firmly sets guidelines and a methodology consistent with National Park Service guidelines for archaeological research, namely that: 1) the project be based on an approved resources management document, in this case the approved Cultural Resource Management Plan for the Golden Gate National Recreation Area; 2) that the project be based on a research design that closely defines the scope of the research, theoretical rationale, and methodological approaches; 3) that the project is essential to the acquisition of data needed by management, or to visitor understanding of the purpose for which the park was established, or to the preservation of in situ remains, or to recover data that otherwise would be unavoidably lost; 4) that the project's purpose (preservation of an endangered structure undergoing significant deterioration through burial) can only be substantially met by the proposed archaeological work; 5) that the appropriate recording of data, analysis of artifactual material, synthesis of data, dissemination of results, and preservation of cultural resources affected, including recovered artifacts has been provided for; and 6) that this action is in accord and in compliance with the National Historic Preservation Act and the National Environmental Policy Act.

### A. Site

The Black Point Batteries (unofficially referred to as Battery East and Battery West) are presently buried under some six to ten feet of earth, gravel and rock fill at Fort Mason, a unit of the Golden Gate National Recreation Area. Fort Mason is located on the shoreline of San Francisco Bay some three miles east of the Golden Gate and is on the northern tip of the San Francisco peninsula. Fort Mason is within the limits of the City and County of San Francisco and is administered by the United States Department of the Interior, National Park Service. Fort Mason was listed on the National Register of Historic Places as a historic district on April 23, 1979. The site of the batteries was included as a feature of the historic district in the nomination; the survival of the actual structure was not known at the time, however. Despite this, the mention of the battery site as a contributing element in the National Register eligibility of the Fort Mason Historic District suffices to confer the protection of the National Register to the structure.

While the battery structure is not specifically monitored, it falls under the category of deteriorating and threatened brick and concrete fortifications cited as being worthy of preservation in the approved General Management Plan for the Golden Gate National Recreation Area. Due to deterioration of the structure (as determined by scientific testing by the staff of the National Park Service's Western Archaeological and Conservation Center in early 1982-- see appended report) a problem statement (Number GOGA-C-21) for the excavation,



preservation, and restoration of the battery was included in the approved Preliminary Cultural Resource Management Plan for the Golden Gate National Recreation Area. The threat of continuing deterioration of the structure and the sudden availability of grant funds allowed the implementation of the project.

The site of the battery was, as of the commencement of initial archaeological research and excavation in 1982, a flat, developed picnic ground with concrete walkways, lawn, and trees. Approximately one half of the site, at the west end, was undeveloped and was covered by native grasses and weeds. The western portion of the battery, comprising all of the undeveloped area and much of the developed picnic ground was partially archaeologically excavated in 1982 to within two feet of the bedrock 1964 site level. A chain link fence separates much of the site of Battery East from the remainder of the site. This fence marks a parcel of land permitted to the United States Department of Defense, United States Army, for officer housing. Archaeological and historical research in early 1982 disclosed that approximately one half of Battery East was demolished in 1910-11 when the area was graded to allow for the construction of a salt water pumping plant at the base of the hill and the remaining sections pierced for a 20 inch high pressure water main. For those reasons--and because of the military permit--this area is excluded from the proposed archeological program.

#### B. Site History

During prehistoric times, Black Point was utilized as a habitation site by the native American peoples of the area. Archaeological investigations in 1978 disclosed the sites of three habitation areas, all of which were nominated to and placed on the National Register of Historic Places (Kelly 1978). None of the three sites were located within the proposed project area. Black Point was fortified in 1797 by the Spanish government of California as a secondary line of defense. A triangular adobe and wooden structure mounting five eight-pound bronze cannon was constructed at the point, quite possibly in the area of the later battery (the subject of the proposed project) along with a brush hut, which served as a magazine. By 1819 the small fortification, referred to as the "Bateria San Jose" was noted as having but one gun; "There were no barracks at the place, no buildings of any kind. There was no guard, only this single gun...." (Davis 1967:137). By 1848 all traces of this battery had disappeared; the gun was presumably removed in 1835 when the Presidio of San Francisco was abandoned and the military forces of the area removed inland to Sonoma. In 1848 the site was inspected and found suitable for military purposes by conquering American forces. Accordingly, in 1850, Black Point was one of several tracts set aside by Presidential Order as military reservations (Dwinelle 1867:221).

Despite the stated intent of the government to occupy and fortify Black Point no steps were taken to secure that goal until 1863. Meanwhile, several "squatters," including former military officer and explorer John Charles Fremont constructed and occupied several cottages, carriage houses, and gardens on Black Point. Other residents included San Francisco banker Joseph



C. Palmer, abolitionist Leonidas Haskell, and Palmer's partner Joseph Cook. The Fremonts purchased twelve acres and a tiny cottage at the very tip of Black Point (within the project area) in mid-1859, renovating and expanding the cottage, which they named "Porter's Lodge,"

the Fremonts enjoyed an interlude of peacefulness in their lives. It was a time when they were leaders in the growing cultural life of San Francisco, when their home saw the comings and goings of the famous, the would-be famous, the to-be famous, and all the others who looked upon Jessie and John Charles Fremont as special people at a special place in the drama of California. (Egan 1977:512)

Upon the commencement of Civil War in the United States in 1861, Fremont and his wife left San Francisco upon Fremont's appointment as Major General in the United States Army. The home was rented to a family friend, Edward Fitzgerald Beale.

The occupation of Black Point, or the Point San Jose Military Reservation, as it was officially designated, in 1863, saw the removal of the residents and the occupation of the civilian structures by the military. The Fremont home was razed the same year to make way for the construction of the temporary battery which is the subject of the proposed project. The battery was occupied and used until 1898 (see the history of the battery in this research design) when a reinforced concrete temporary two gun battery and magazine were built during the Spanish-American War. The magazine was constructed in the approximate area of the timber magazine for the Civil War battery's West magazine, while the two gun battery was built just outside the area of the former fortifications. After the Civil War battery was completely abandoned in 1898 their sites remained unused until 1911. That year, approximately one half of the buried East Battery was demolished during grading of the hillside for a salt water pump station, while the West Battery was buried beneath earth fill piled around a reinforced concrete powerhouse constructed inside the battery walls. The powerhouse provided electricity for a searchlight located further down the hill. In 1915 the site was partially redeveloped with lawns, shrubs, trees, and concrete stairs and pathways during an effort to beautify the post for the Panama-Pacific International Exposition, part of which occupied Fort Mason lands (the Point San Jose Military Reservation had been named Fort Mason in 1882).

In or around 1943 the remaining area of West Battery was covered by a three story wood frame barracks--Bachelor Officer's Quarters--which stood, along with the powerhouse, until the early 1970s. The buried, half-demolished remains of East Battery were incorporated into the private yard of a military residence (Palmer's old house) and a picnic ground.

Upon the addition of Fort Mason into the Golden Gate National Recreation Area in 1972, additional earth was imported and dumped over the site of West Battery to fill the depressions left in the ground after the demolition of the powerhouse and the barracks building. The picnic ground was retained as a public use feature of the fort, now a park unit, and a chain-link fence was installed to keep the public out of the residence yard, which had been permitted to the army for military use.

Drawer 90.  
Sheet 1.

SAN FRANCISCO HARBOR

MAP

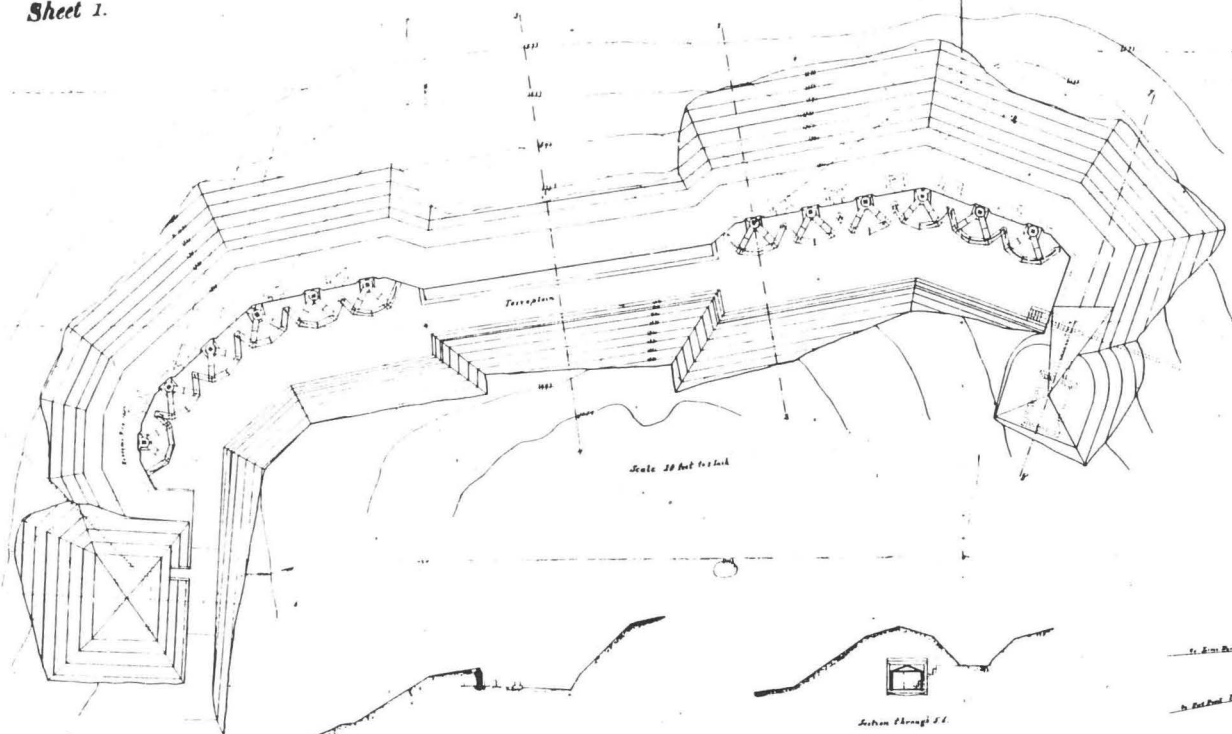
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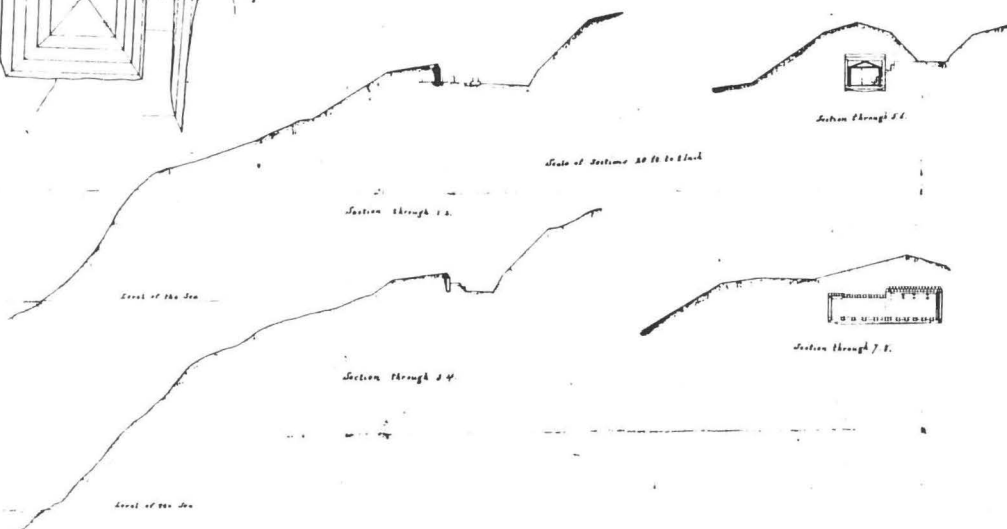
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COL. R. E. DE RUSSY

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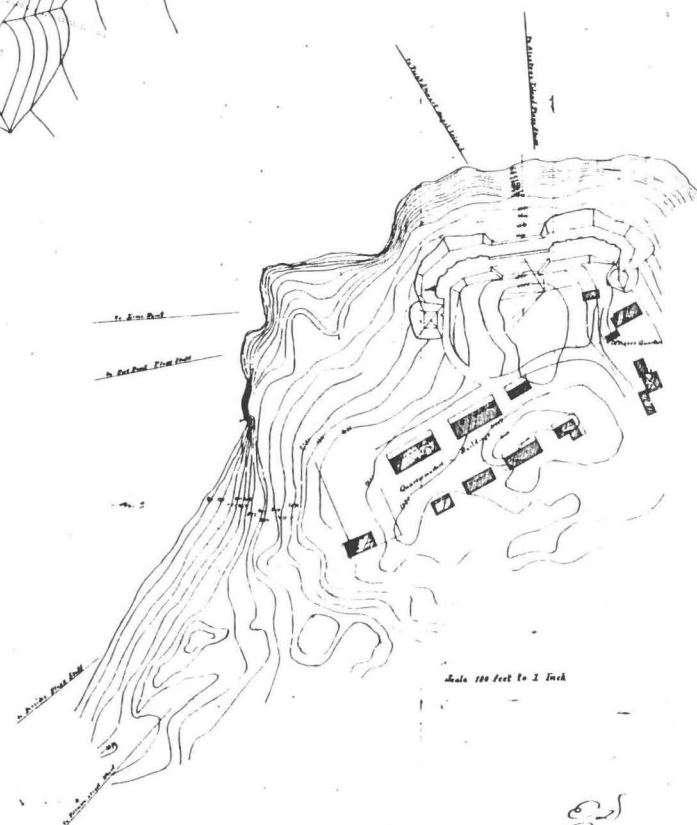
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### C. Previous Investigations

The integration of Fort Mason into the Golden Gate National Recreation Area in late 1972 was one of many actions which focused the attention of National Park Service historians on the military history and cultural resources in the area. The completion of a Historic Resource Study for the Golden Gate National Recreation Area in 1978 and the completion of a revised National Register of Historic Places nomination form for the Fort Mason Historic District in 1979 focused attention on the temporary brick and earthwork harbor defense fortification constructed at Black Point. No physical evidence of the battery was known to exist at the time--a picnic ground, a rear yard for an officer's residence, and three structures (a garage, a Bachelor Officers' Quarters, and a Powerhouse)--occupied the site and obscured any details. Following the removal of the structures, however, Park Historian John Martini began to investigate the area for evidence of the former battery. A concrete wall of the garage structure was found to be the wall of an 1898 battery constructed on the site to replace the original 1863 brick structure. In 1975 a concrete magazine--part of the 1898 battery complex--was found and cleared by Martini. The presence of these later structures and the absence of any visible structural remains of the 1863 structure indicated that the structure had not survived. In 1978, however, a brush clearing operation at the site disclosed the protruding edge of a brick wall. When further cleared, this wall proved to be a section of the 1863 battery structure. The implication was that the battery structure had survived when it had been backfilled at some unknown date.

As a result of this, the battery was shown on sensitivity maps for historical archaeological resources for the Golden Gate National Recreation Area (Kelly 1981) as category one resources. The category designation stated that the battery was one of many resources within the park "which are known to exist by visual inspection, documentary reference, reliable informants, and whose integrity has not been seriously altered by human or natural forces. Values for research and other approved uses are present."

The opportunity to physically verify the survival of the battery structure was not realized until January of 1982, when a proposed irrigation system on the site required an archeological clearance. Park Archeologist Martin Mayer and Park Historian James Delgado conducted a limited program of subsurface probing and excavation in conjunction with volunteer archeologist Robert L. Bennett and Regional Archeologist Roger Kelly. The preliminary results of that project is appended to this research design. The basic findings of the investigation were that much of the battery structure had survived--with damage to some sections--with the exception of approximately one half of East Battery, which was demolished in or around 1911 during a grading of the hillside. In association with the intact portions of the battery were the archeological remains of timber revetments atop the walls, timber platforms for mounting the battery cannon, and some associated artifacts such as friction primers for firing the guns, iron hardware from gun carriages and magazine doors, and some isolated finds of 20th century glass and earthenware. Many intrusive materials apparently deriving from the site's use as a picnic ground were also recovered, as well as window glass and modern nails which apparently were associated with the 1942 Bachelor Officers Quarters



on the site. Scientific testing of the brick of the battery walls was conducted by Dr. Elvia Niebla from the Western Archeological and Conservation Center at the same time. The results of Dr. Niebla's report (appended to this research design) indicated tht the burial of the battery was causing its deterioration due to groundwater intrusion and recommended its preservation.

#### D. Compliance

To initiate the necessary compliance with Federal historical and archeological preservation laws, an "Assessment of Actions Having an Effect on Cultural Resources" was completed and submitted (see attachment). This research design is hereby submitted for review and approval by the Regional Archeologist, Western Region, and the Chief, Western Archeological and Conservation Center, in compliance with NPS-28. An environmental assessment of the proposed project and a negative declaration were also prepared and submitted to the Regional Director, Western Region.

On July 23, 1982, an Assessment of Actions Having an Effect on Cultural Resources for the Archeological excavation and stabilizátion of Battery East and West, Fort Mason was approved and designated as Project Number 179 WR.

Additionally, the Environmental Assessment and Finding of No Significant Impact prepared for this project were approved on August 3, 1982.

## 2. Historical Background

### A. History of the Civil War Battery

The outbreak of civil war on the eastern seaboard of the United States accelerated the need for modern fortifications and strengthened garrisons on the Pacific Coast. American fortification of the important harbor and port of San Francisco Bay had begun soon after the conquest of California in 1848; by 1853 work was progressing on a major brick and granite fort at the entrance to the harbor and on fortifications on Alcatraz Island in the middle of the bay (Bearss 1973). However, monies allocated for the projects lagged and many were in an incomplete state when civil war commenced in 1861. To compound the problem, in many cases completed fortifications lacked weapons since

Throughout most of the period between 1820 and 1850, the production of cannon had tended to lag behind the completion of new defensive works....Because the forts were generally under-garrisoned and carriages were in short supply....relatively few guns were actually mounted.... Moreover, there was practically no reserve of heavy cannon available to replace those that might be damaged in service or to arm the dozens of temporary works which were to be erected over the years to come. (Lewis 1979:65)

The lack of readiness in California worried military commanders on the Pacific Coast, particularly since they perceived to be surrounded by a hostile populace:

A Southern Democratic party had dominated politics since statehood in 1850, and its partisans controlled the state government, federal offices, and the state's congressional delegation. The adherence of this party to the cardinal principles of state sovereignty and white supremacy, and the statements of its prominent leaders in speeches, letters, and the party press indicated that its members sympathized with the South in the coming struggle and wished California to form an independent Pacific Republic. (Chandler 1981:35)

Other threats, all of which are now known to have been virtually non-existent also exacerbated the situation; a common perception was that "Confederate privateers and raiders were threatening California gold shipments, vital to the North; and suspicious operations were being carried on by foreign warships" (Gilbert 1954:229). In response to the "crisis" several measures were taken; these included the completion of the unfinished fortifications, the garrisoning of men on the supposedly impregnable fort on Alcatraz Island, the massing of arms, and the quelching of anti-Union sentiment. These initial steps, however, were not viewed by the military to be adequate to protect the port, particularly since the existing emplacements of harbor defense guns did not provide full coverage of the waterfront, particularly to Major General Irvin McDowell, the military commander of the area:

I am struck by the fact that at this time, in this distant port and in the present and unsettled and delicate state of our affairs, there are now lying English, French, and Russian men-of-war covering the shipping and town completely, and that we have not a single gun, either ashore or afloat, bearing or that can be brought to bear on them, to require them to leave should we wish them to go. (War of the Rebellion 1850-1901:929-30)

Political pressure to improve the situation was soon brought to bear on Congress and the military command in the east. As early as 1861, when local residents began to petition for a floating battery to defend the harbor, plans were also being formulated for land-based temporary batteries (Miller 1966:113). Sites selected included Rincon Point near downtown San Francisco and Yerba Buena and Mare Islands on the bay, but by 1862 the plans had been changed and batteries were slated for construction at Black Point and Angel Island, both of which were close to the harbor entrance at the Golden Gate. Under orders from General George Wright, Commander of the Department of the Pacific, Chief Engineer Colonel Rene De Russy, in consultation with local officials and officers, had prepared a plan for "field works to command the approaches to the city, should a landing be attempted by the enemy" (War of the Rebellion:797). Wright unsuccessfully lobbied for the proposed batteries, but declining fears of Confederate attack in 1862 and early 1863 forced a tabling of the idea (Edwards 1963:97-98).

Congressional allocations in 1863 and 1864 eventually paved the way for the construction of new, temporary batteries:

No less than \$400,000 was made available for the fortifications for the bay in fiscal year 1864. Of this total, the largest slice went to the Fort at Fort Point--\$200,000. The works at Alcatraz received \$100,000 and the remaining \$100,000 was for the temporary batteries (Thompson 1979:54).

The location of the batteries became an item of dispute because General Wright ignored the recommendations of Colonel De Russy and ordered the construction of a 12-gun battery at Rincon Point. Wright received word in San Francisco on August 11, 1863 that the money had been allocated and orders were immediately put into effect to start work (War of the Rebellion: 559-60). At the same time, Wright, writing to his superiors in Washington, noted that

The prompt action of the Department in setting apart \$100,000 for the erection of these batteries has been highly gratifying to the loyal citizens of this city....(War of the Rebellion:568).

Wright's plan to construct a battery at Rincon Point was forestalled when General-in-Chief Henry Wager Halleck convened the United States Army Board of Engineers to discuss locations for temporary batteries on San Francisco Bay. On August 18, 1863, the Board's decision was wired to Wright in California:

While the defenses of the entrance of the Bay of San Francisco are incomplete, the Board believes that every gun that can be spared, every dollar spent, should be devoted to the perfection of these defenses. They think that ten heavy rifled guns at Lime Point would add more to the strength of this entrance than fifty scattered at less important points....For the strengthening of the second line of defense they recommend a battery of ten guns on Angel Island, so located as to unite as well as possible the defense of Raccoon Straits with a cross fire toward Alcatraz. (War of the Rebellion: 557-76)

Work was halted at Rincon Point and plans for the erection of temporary batteries at Black Point (known to the military as Point San Jose) and Angel Island commenced (Hussey, 1949). The Point San Jose Military Reservation had been the site of a Spanish battery in early California. Known as the Bateria San Jose, the small emplacement, built in 1797, mounted five eight-pounder smoothbore cannon but had fallen into disrepair early in the nineteenth century and had vanished by the time of the American conquest. Black Point had then been settled by several prominent local citizens, and homes, gardens, and outbuildings had been developed along the crest of the point, despite an 1850 Executive Order which set the land aside for military use (Dwinelle 1867:221). The lack of a military presence did little to reflect the army's desire to utilize the point, and the residents, including Major General

John Charles Fremont, ultimately felt that title to the land would eventually be determined to legally be theirs. The selection of the point for use as a site for temporary Civil War batteries decisively quelled any such possibility.

Plans for the batteries at Black Point were prepared by Colonel De Russy, and on October 3, 1863, General Wright received word that

The Secretary of War directs that you take military possession of Point San Jose, and erect the battery proposed for its defense. The question of ownership will be determined hereafter. (War of the Rebellion:636)

On October 8, 1863, Wright, acting in accordance with the Secretary's directive, ordered

The commanding officer of the Ninth U.S. Infantry will send one company of the Ninth Infantry to encamp on Point San Jose and take and hold military possession of such land as Colonel De Russy may designate as necessary for the erection of batteries. (War of the Rebellion:642)

The orders were immediately acted upon on October 13 when "Company H, Ninth Infantry Regiment, marched from the Presidio of San Francisco to Point San Jose....The soldiers immediately occupied the lone barracks that had been constructed that summer, probably by a civilian contractor." (Camarena and Thompson 1980:3). The troops were not actually needed for the actual construction work since contractor George D. Nagle had been retained by the government to build the battery at Black Point. Nagle, a college educated architect and engineer with a substantial professional reputation, had a long and varied career as a builder. Starting in New Orleans where he had helped to build Fort Jackson for the defense of the city, had progressively ventured west, arriving in California during the Gold Rush in 1849. Locating in San Francisco in 1852, Nagle had earned a reputation for being an honest, hard-working and extremely competent builder and had erected several substantial structures. Prior to his retention by the government for the works at Black Point, Nagle had "manufactured the brick and constructed.... most of the brick and mason work of the quarters, magazines, and fortifications at Angel Island and at Fort...Points...." (Swasey, 891). Nagle's experience with military structures and his apparently superior brick made him an excellent choice for the Black Point work, and the nearby construction of the Pioneer Woolen Mills on the shores of Black Point Cove by Nagle at the same time made his task easier since material and equipment for the battery construction were easily accessible. An advertisement for Nagle's services in the 1864 City Directory for San Francisco noted that he was ready to supply estimates for "Buildings, Railroads, Bridges, Earthworks, and all Descriptions of Contract Work" and that he had "Bricks on hand and for sale in any Required Quantity." (Langley 1864:iii).

As built, the fortifications at Black Point, or Point San Jose, would consist of two batteries; "East was to have six guns, and the works were to be called East and West batteries....They lay adjacent to each other and were connected

by a covered way (sunken road)." (Thompson 1979:59). Initial work began in October of 1863, soon after the soldiers occupied the point. Trees and shrubbery were cut down, enraging the as of yet unevicted residents of Black Point, who complained to General Wright. Responding to their complaints, Wright wrote:

I was instructed to take military possession of Point San Jose and erect the battery proposed for its defense, adding that the "question of ownership will be determined hereafter." I regret the destruction of shrubbery which you say has been committed, and will give special orders on the subject. (War of the Rebellion, 649)

Whatever feelings of anger the residents of the point may have had were intensified in a few months' time when the home of John Charles Fremont, a United States Army Major General, near the end of the point was demolished to make way for excavations for the batteries. This action, coupled with the military's eventual seizure of all structures on Black Point and the eviction of the residents, would spark legal contests which would last well into the 20th Century (Thompson 1980:2-6).

Actual work for the battery structures began in early 1864 and was progressing at a good pace by March.

Considerable excavation for the batteries was carried out....and the parapets (of stone free earth) and breast-height walls (of brick and concrete) of both batteries were carried up to their proper heights except for the traverse at the east end of East Battery. (Thompson 1979:60)

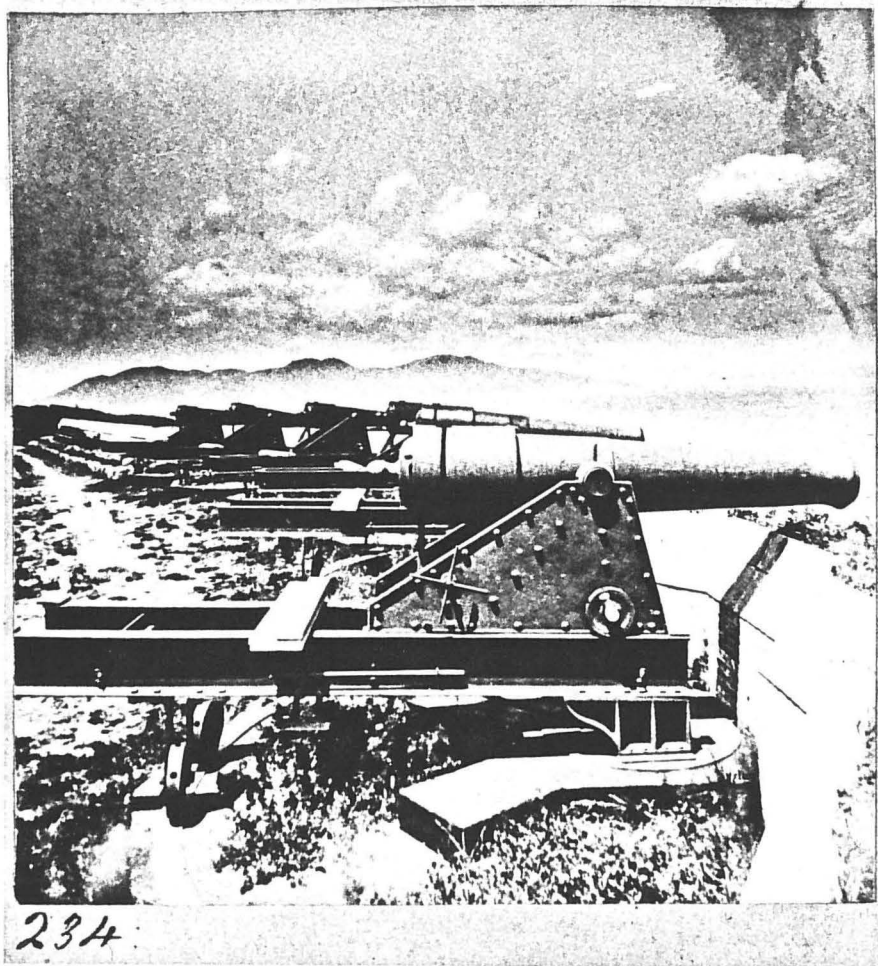
On March 18, 1864, the San Francisco Alta California, reviewing the harbor fortifications, remarked on the work in progress at Black Point:

These batteries are right in town, and can be reached in a few minute's drive....They consist of a semi-circular line of earthworks, overlooking the harbor at an elevation of about eighty feet above tide water. These, as well as the others at Fort Point and Angel Island, are under contract to Mr. George D. Nagle, who has not less than four hundred men constantly employed in various public places. The earthworks are backed by extremely solid masonry, in the rear of which extensive excavations in the rock have been made for magazines and fighting room.... The whole of this battery is upon the latest and most approved plans--such as the valuable experience obtained in the present war has suggested....The contractor is entitled to no little praise....

By April of 1864 work on the battery was nearly complete:

....the interior crests were revetted with tongue-and-grooved planking, which was painted. Each battery had





EAST BATTERY AND COVERED WAY

C. 1869, PHOTOGRAPH BY EADWEARD MUYBRIDGE



five small shell rooms in the parapet between the six guns. The slope behind the terreplein was taken down "at  $\frac{1}{2}$  to 1." A ramp was excavated leading into West Battery, and by means of it and the covered way between the batteries the guns could be hauled into both. At the far east and west ends of the complex, a wooden magazine was constructed and covered with ten feet of earth. The magazine for East Battery measured 10 by 16 feet, and West Battery was 10 by 14 feet. (Thompson 1979:60)

The guns for the batteries were in waiting at Mare Island, having been reserved as early as August of 1863 by Colonel De Russy. In October of 1863, the Chief of Ordnance had written that

Orders were given on the 6th instant to send to Col. R. E. De Russy at San Francisco, for the harbor, two 15-inch Rodman guns, with iron carriages, implements and equipments complete and 1,000 rounds of ammunition; ten 10-inch Rodman guns, with iron carriages, implements and equipments complete, and 1,000 rounds of ammunition; five 8-inch guns, with carriages &c., complete, 500 rounds of ammunition; all to be shipped from New York, and on the completion of this order twelve 42-pounder rifled guns, with iron carriages, &c. The carriages are now ready, but the guns have to be banded; those first finished will be sent. Projectiles will be sent with the guns. (War of the Rebellion, 597).

On April 2, 1864, Wright inquired when the guns would be mounted at Black Point; orders had just been cut sending additional troops, Company D of the Third Artillery, to Black Point, where they would be housed in a new barracks built adjacent to that of Company H of the Ninth Infantry (War of the Rebellion, 805). On May 2, 1864, Wright noted that the guns were about to be mounted; by June 30, 1864, six 10-inch Rodmans on front pintle iron carriages were mounted in West Battery (Thompson 1979:60). Six iron carriages were in place at East Battery, but the banded James pattern 42-pounder guns were still not ready, despite the fact that six front pintle iron carriages for the guns had been installed. The older 42-pounder guns had presumably not been shipped to San Francisco, probably because the guns needed modifications (banding and rifling) to make them more efficient, and a press of needs for guns in Eastern forts. In August of 1864 renewed pleas were made by Wright's replacement, General Irwin McDowell, for the overdue rifled weapons; the weapons were presumably finally mounted in late 1864 since a newspaper account in October noted that "six guns are now mounted ready for service at that point, and six more, of very heavy caliber, will soon be mounted." (S.F. Alta:October 4, 1864). It would seem likely that by the end of 1864 the two batteries were armed, manned, and ready for action.

It is ironic to note that the completed batteries, while much sought after and praised as the means for adequately defending the harbor were found to be inadequate by the military for defense; even more ironic is the fact that the inadequacy of the batteries was a moot point:

The goal of impregnable defenses for San Francisco was not reached during the Civil War. Funds were not readily appropriated to defend a port so distant from the actual scene of battle....Actually, little danger from Confederate depredations existed on the Pacific coast; if an attack had been made on San Francisco, it would have been on a small scale, and probably could have been repelled with the existing defenses. (Gilbert 1954:237)

By the end of the war in 1865, the battery, which never fired a shot in anger, had only 66 pounds of black powder in its magazines; this was a direct contrast to the estimated maximum capacity of 360 pounds (Thompson 1979:66).

Despite the fact that the batteries were insufficient and came too late, the importance of the completed "temporary" batteries at Black Point became apparent following the Civil War. Changes in military technology had taken place through hard-learned lessons during the war. Older masonry and stone forts were found to be obsolete:

Civil War experiences at Fort Pulaski where rifled guns had breached the scarp after a short bombardment, and at Fort Jackson where projectiles from XIII-inch mortars had battered the defenses caused many officers to question the value of expensive masonry fortifications. A technical revolution in heavy ordnance had apparently made the handsome and costly third system forts obsolete....Favored were barbette batteries, with service magazines in the traverses between each pair of guns (Bearss 1973:184-7)

Faced with these findings, the engineers in San Francisco began to make plans at the end of the war to enlarge the now important batteries at Black Point. The plans called for the mounting of three 15-inch Rodman guns which had been shipped to San Francisco at the end of the war. These large weapons

represented cast-iron smoothbore ordnance carried to its absolute practical limit. The largest piece, of 15-inch caliber, was easily the most powerful service cannon in the world, and it was quickly adapted as the standard seacoast weapon... (Lewis 1966:65)

However, the money to mount the three 15-inch guns did not materialize and the plans were dropped by 1868.

In 1867-1868 the batteries were inspected and were found to be "admirable" despite the fact that the "rear slope of the battery was a high bank of loose friable rock. If any enemy shell hit it, the spalling would make the battery untenable." (Thompson 1979:4) After several consultations and inspections, new plans were prepared in 1869 and forwarded to Washington to build "permanent" fortifications at Black Point. The new fortifications would consist of

a large "fort" enclosed by an earthen parapet that included the existing batteries. The five fronts of the fort had five different elevations--the crests ranging from 94 feet to 118 feet. The parade in the center had a reference of 106 feet. The proposed armament consisted of two 20-inch guns, sixteen 15-inch guns, eight heavy rifles, six field guns for the land side, and twelve seacoast mortars. The estimated cost of the project came to \$200,000. (Thompson 1979:88)

Like the earlier plans for the three 15-inch guns, however, this new plan never materialized since Black Point was considered a secondary defense and therefore was not a high priority. Black Point's priority "never did become high enough for this project to be undertaken before all appropriations were cut off" (Thompson 1979:88). The only work to go ahead at Black Point consisted of repairing the deteriorated wooden magazine of West Battery in December of 1870 and remounting three of the 10-inch Rodmans on new wooden platforms in April of 1871 (Thompson 1979:120-121). Unlike later and more "permanent" emplacements, the temporary batteries at Black Point had wooden platforms treated with melted coal tar rather than concrete or granite, meaning that the longer the batteries were in use the magazines and platforms would frequently need to be rebuilt. This problem once again became apparent in 1872 when the roof of the wooden magazine at East Battery began to collapse. In 1873 the West Battery magazine was completely rebuilt with wood and asphalt and three gun platforms were replaced at a cost of \$1,600 (Thompson 1979:120-121). East Battery at this time was considered "unservicable since the platforms had rotted and its magazines had fallen in." In 1887, the original guns at East Battery were removed, the rotted platforms demolished, and the battery was abandoned. In 1892, however, one new weapon, a 10-inch Rodman converted into an 8-inch muzzle loading rifle, was emplaced at the westernmost gun pit of East Battery and remained there until 1898 when it was moved to the new concrete fortifications near West Battery. West Battery received new platforms and three of the original Rodman guns were left in place; this was due to the fact that the post (re-named Fort Mason in 1882), was the residence of the Division Commander, and was "often visited by foreign officers and other personages of high rank and note; that the battery referred to has, until the past season, been frequently used for saluting purposes on important occasions...." (Thompson 1979:121)

West Battery suffered a slow but inevitable decline prior to 1891 despite an 1889 plan to modify the platforms for 8-inch guns used in target practice. In October of 1896, the six original 10-inch Rodmans were apparently emplaced along with the one 8-inch converted rifle at East Battery despite the complaint that the "battery has no magazines and no convenient place to put them." In 1898, at the outbreak of the Spanish-American War, the threat of invasion again seemed imminent but the original battery was considered inadequate for re-fortification; plans for a new battery, consisting of two concrete platforms for 10-inch Rodmans converted into 8-inch rifles and a new concrete magazine were prepared and the new fortifications constructed by July of 1898 (Thompson 1979:191). The site of the old wooden magazine at West Battery



WEST BATTERY SHOWING ENTRANCE TO WOODEN MAGAZINE

C. 1870, PHOTOGRAPHER UNKNOWN

was selected for the new concrete magazine, which survives to this day though now buried (Martini 1975). One of these converted rifles was removed in 1904; the last Rodman was still emplaced as of 1909. The survival of the Rodman gun was not in itself unique, since "hundreds remained to constitute the primary coast defense armament for an additional twenty years (after the Civil War), beyond which some of them saw further service in emergency batteries during the Spanish American War" (Lewis 1966:65). The fate of East Battery is (as far as is known) unmentioned in the official post reports; a perusal of the maps of the post indicates that after 1909 much of the battery was demolished when the parapet slope was cut away to allow for the construction of the San Francisco Fire Department's Pumping Station Number Two on the bayshore below. After 1911 West Battery, the covered way, and the remaining portions of East Battery disappeared, buried beneath fill and obscured by concrete walks and lawn. The site was then developed into a park area.

### 3. Archeological Components

#### A. Site Components

The preliminary archeological investigations in early 1982 and historical research have indicated that the following site components are likely to be encountered during the proposed project:

**STRUCTURAL REMAINS:** The actual brick walls and associated features of the battery will be revealed through excavation. Features in the wall include ready magazines (small brick rooms between gun pits for the immediate storage of shot and powder), iron Gudgeon plates for pintle hinges on the ready magazine doors, gun pits (indentations in the otherwise linear wall where the guns were emplaced) and an asphalt (tar) topping. Remnants of the redwood timber revetments atop the walls (which held back the earth "superior slope" will be encountered. Square iron nails utilized in the construction of this revetment will also be encountered. Timber mounts (platforms) for the actual cannon should also be uncovered. Iron spikes, drifts, bolts, nuts, and washers used to hold these platforms together will also be encountered--as to whether this will be the case in every gun pit (there are six) is unknown. A slight possibility exists for the discovery of sections of the iron traverse rails (flat, curved iron tracks on which the wheels of the gun carriages rolled). The preliminary excavation of gun pit number seven, West Battery, in early 1982 disclosed a concrete floor laid atop fill covering the rotted timber platform. This same concrete surface may be encountered in the other gun pits in West Battery. Obviously the original surface of the battery terreplein (the "floor") will be encountered. It is dressed native bedrock. A stepped platform cut into this bedrock beyond to the east of the West Battery gun pits which served as an emplacement for infantry should also be encountered. Original dressed rock walls marking the end of the battery, drains cut into the roadway, and the now buried portions of the flanking wall (a dressed cliffside) will also be found. In addition, structural remains of the original timber magazine for West Battery, which was replaced by the present concrete structure in 1898, may be encountered as loose debris in the fill material.



ARTIFACTS ASSOCIATED WITH SITE USE, 1863-1898: Certain artifacts associated with the use of the battery by the military between 1863 and 1898 will be encountered. Brass or copper "friction primers" (a type of "match" used to fire the guns) will be found--quite probably Model 1861 and Model 1863. These items were discarded after the firing of the weapon. Some small cannon maintenance or firing apparatus--or fragments of these items--may be found in close proximity to the platforms, as would any items which may have fallen out of uniforms--bullets, buttons, medals, coins, broken pipes, etc. in close proximity to the platforms. Earthware or glassware--quite possibly wine or liquor bottles--may be found. A fragment of an earthen ware ale bottle and a fragment of a wine bottle dating from this period were recovered during the preliminary test excavations. These materials may answer questions of substandard military maintenance and cleanliness of the area, as well as the human factors of behavior in a "boring" and passive situation waiting for an enemy who never came.

ARTIFACTS ASSOCIATED WITH SITE USE, 1900-1945: Artifacts from the three intrusive structures built on the site during these years will be encountered, usually consisting of modern round nails, wood fragments, fragments of glass window panes, and probably electrical fixtures. A metal bar grill from one structure was encountered in 1975 in the fill sealing the 1898 magazine--other artifacts of this nature may be found. In addition, buttons, coins, etc. may also be encountered. The possibility of structural remains of the reinforced concrete powerhouse built on the battery site in 1911 may also be encountered.

ARTIFACTS ASSOCIATED WITH RECREATIONAL USE OF THE SITE, 1915-1982: Silverware, glassware, coins, and personal items which may have been dropped or spilled onto the ground at the site may be encountered. The preliminary test excavations in early 1982 uncovered fragments of modern soda, wine, and beer bottles. No coins or other items attributed to the recreational use of the site--save evidence of campfires on the site (burnt wood, ash) were encountered.

ARTIFACTS ASSOCIATED WITH THE BATERIA SAN JOSE (1797-1835?) AND THE FREMONT HOUSE (1850?-1863): If the project area was the site of the Bateria San Jose (the actual location is unknown) there is a slight possibility of some demolished remains of the structure or of materials associated with the site use being encountered during the excavation of the project area. Such materials would most probably consist of fired adobe bricks, rotten timber, and/or iron fittings, cannon balls, or other period artifacts. This possibility is considered to be very unlikely. There is a slightly higher possibility of encountering some remains of the Fremont home--or of materials dating from that period of site use. The artifacts encountered would be well within the range of artifacts excavated from any other mid-nineteenth century domestic site. If encountered, however, these artifacts would be scattered, within the fill materials and would lack locational integrity, inasmuch as they would be secondarily deposited--perhaps even redeposited secondary deposits of artifacts.

#### B. Intrusive Factors and Disturbance

Minor damage and repairs to the battery structure occurred throughout its period of use. After its abandonment in 1898, major disturbance and damage occurred in some areas. By far the worse was the partial demolition of East



Battery in or around 1911. At that time, the construction of a salt water pump station at the base of the hill required the grading of the slope. When this was accomplished, approximately one half of East Battery was demolished--basically gun pits one, two, and three. The new grade was so extreme that it projected far below the original grade of the terreplein in the vicinity of the walls--thereby ruling out any subsurface remnants. However, loose, broken, and highly disturbed bricks and debris exist in the fill material. At the same time, a 20-inch diameter cast iron fire main was run up the hill from the pump station to upper Fort Mason. The installation of this pipe necessitated the demolition of the ready magazine between gun pits five and six, East Battery, and the partial demolition of gun pit six. Archeological excavation of this area in early 1982 disclosed the large break in the battery wall, many loose brick fragments, and the fire main. In the West Battery a reinforced concrete powerhouse for a searchlight installation on the roadway down the hill was constructed in the vicinity of gun pits nine and ten in 1911. The powerhouse was evidently built in the original terreplein surface of West Battery, and it appears that the brick walls of the battery were buried as the grade of the hill behind the powerhouse was raised to provide cover for the structure. A subterranean powerline ran down the hill from the powerhouse--the battery wall in the area may have been breached for the installation of this line. At the eastern end of West Battery, just beyond gun pit seven, verified damage of an unknown origin--a toppled section of wall running for approximately twenty linear feet--was encountered during excavation of the site in early 1982. The damage described for West Battery is the only known disturbance of the battery structure in the project area.

Evidently the battery sites were backfilled prior to 1911. In 1915, the area was graded and landscaped and lawns, trees, shrubs, and pathways installed during a post beautification program. This work, along with the construction of the temporary wooden Bachelor Officers Quarters in the West Battery area in 1942 probably disturbed the fill and the archeological materials associated with the fill to an unknown degree. Demolition of the BOQ and the powerhouse after 1974, as well as the installation of various irrigation systems and new lawns have doubtless contributed to the disturbance of the fill material.

The only known factor was the deposition of approximately one hundred cubic yards of earth fill from an unknown site over the area of the West Battery in or around 1978. According to the Landscape Architect in charge of the project, no artifactual materials were located in this fill during the removal, deposition, or grading of the fill material. As a result of this filling project the grade of the West Battery site was raised some two feet above the level of the 1911 fill material.

### C. Benefits of Study

The investigation of archeological sites of military interest was one of the first interests of historical archeologists in the United States (Hume 1975:183). From relic hunting expeditions to historic sites archeology as practiced by and for the National Park Service in the cause of historic

restoration and reconstruction of military sites such as Fort Necessity in Pennsylvania (Harrington and Schuyler 1978:91-138) the practice has matured with modern historical archeological methods utilizing interdisciplinary approaches and assessing data historically and anthropologically. See also Casemates and Cannonballs, Hanson & Hsu, NPS 1975.

The historical archeological investigation of a military site can offer significant and meaningful data. Hume (1975:188) states that the only site which cannot offer much more than a few artifacts and relics is that of a battlefield:

Little can usefully be said....If one side had time to dig in, we may be left with the remains of fortifications....if not, the site will have little to distinguish it, except perhaps some graves and a scatter of hardware that can best be salvaged by using a metal detector. There can be no meaningful stratigraphy....

However, sites where soldiers "waited"; forts or somewhat permanent defenses, like Fort Mason can offer more. These sites

saw numerous changes of occupancy in the course of their existence. Regiments came and went....In short, their history was as checkered and as evolutionary as that of any domestic site; indeed, to all intents and purposes they were domestic sites, producing the same complicated archeological stratigraphy and demanding the same skill and discipline in unraveling it. (Hume 1975:184)

Archeological excavations and research have been conducted at military historical archeological sites, notably at Fort Necessity (Harrington 1948), Fort Bowie (Herskovitz 1978), Fort Stanwix (Hansen and Hsu 1975), and locally at Fort Point, overlooking the Golden Gate (Kelly 1980).

The nature and complexity of the archeological record at a fort which was occupied for any substantial period of time, therefore, can be significant. Obviously, though, areas of primary occupational activity (barracks, messes, privies, stables) would have a greater range of materials than a rampart, guardhouse, battery, or parade ground. Materials with a potential for offering important data and the means for assessing the human history of the site can be found in these areas, however. The nature of certain archeological materials that are hypothesized as being present in the project area at Fort Mason are important tools in these types of determinations. Remnants of bottles, crockery, and meals may indicate foodways; liquor, wine, or beer bottles may indicate one means of dealing with long, boring stretches of duty in a lonely wind swept fortification. Graffiti scratched in the wall surfaces may also indicate a reaction to the same boring duty effects.

A definite potential for artifactual materials which will allow an assessment of the humanistic details and anthropological determinations to be made in the best manner of modern historical archeological practice has been shown. However, it must be stressed that much of the artifactual record relates to changes in the actual physical record of the structure and changes in thought patterns, technology, and site use that can be traced to specific

alterations from the 1863 design. Changes in the timber platforms for guns may indicate changes in weapons technology--a 10-inch rodman converted into a 8-inch muzzle loading rifle may have required a different platform design--or in the designated use of the site, which relates to larger sociological, political, and economic reasons. Removal of weapons, demolition of certain portions, the bricking up of ready magazines (which would indicate an occasional, non-defensive use such as firing salutes) are also important in assessing anthropological implications. In addition to change in the structure, specific design features in the 1864 design may, in conjunction with the written record, indicate the "mind-set" of the builders and the citizens which the battery defended. The physical fabric of the battery structure, therefore, holds as much promise and significance as the associated artifactual materials relating to the use of the site.

The actual documentation of otherwise unrecorded features--angles, slopes, grades, bonds, fastenings, and construction techniques--is also important to the eventual goal of restoring the structure in an accurate fashion and manner. The inherent weaknesses of the written record, the scarcity of graphic records (photographs) and the errors and omissions of maps and plans can be corrected and/or verified through the careful examination and documentation of the archeological record. Thus the inherent strength of a proper historical archeological investigation is demonstrated.

#### D. Research Questions

Based upon the reasons for the preliminary project and upon a series of logical questions which could be asked--and hopefully answered--by the proposed project a basic research design has been formulated. The questions posed in the following discussion have been partially answered by the preliminary work. Some have been posed as a result of the preliminary work. Additional questions may yet be posed after the proposed project is completed, to be answered by additional research and analysis. Most of the research questions relate to the issues of construction characteristics, extent, integrity (condition), and the historical archeological significance of the resource. Some are strictly related to anthropological concerns of cultural implications.

The research questions fall into four basic categories: 1) the physical characteristics of the batteries prior to burial; 2) the function and role of the batteries; 3) the nature of the archeological record and the question of anthropological implications; and 4) the extent and the integrity of the resource.

1. What were the construction characteristics of the original battery construction?

This question relies on the interdisciplinary approach of historical archeological investigation for an answer. While archival sources such as maps, plans, photographs, and reports document certain characteristics of the structure, cross-checking the archival record with the archeological record will provide many additional undocumented details. The veracity of the written record has been challenged in the past since the documents may not reflect "as-built" conditions. In addition, essential details

such as bonding, mortar types, abutting techniques, use of timber and mastic, hinging, and foundation types were often ignored in plans or cannot be discerned in photographs, hence the importance of the archeological record.

2. Can these construction techniques be construed as wide-spread and popular or were they site-specific?

Historical research into brick construction methods of the region and the nation can discern whether these construction techniques employed in the construction of the Black Point batteries were folkloric methods employed by the individual workman, standard construction practices as supervised by the contractor, or specific design criteria as specified by the military. The actual conditions encountered are likely to be a mixture of all three.

3. Can these construction techniques be compared with other extant examples of the builder's work?

Several examples of the brick construction practice of George Dédrick Nagle, the contractor who built the Black Point batteries exist. Specific examples include military works at Fort Point in San Francisco and Fort Jackson in New Orleans and a contemporary (to the year) structure, the Pioneer Woolen Mill, now incorporated into the Ghiradelli Square complex in San Francisco. Obviously, a continuity in Nagle's technique would greatly assist the answering of question number two.

4. What can a study of the Black Point battery structures tell of West Coast (particularly San Francisco Bay Area) brick manufacturing and construction?

The prime value of the Black Point batteries would be as a focal point for gathering historical and archeological evidence to assemble a review of the early brick manufacturing industry of the region as a datable and well documented example. Other examples--bricks gathered from contemporary structures--and the Black Point bricks could be subjected to scientific analysis (density, compression strength, composition) and testing to determine relative values and to verify--or disprove--historical accounts and advertisements lauding one brick type over another.

5. How were the batteries utilized throughout their period of use?

The "life" of the batteries, the evolution of site uses, the changing roles and needs for the structure all relate to larger changes in society's perceptions and roles and needs. These perceptions are shaped by sociological, political, economic, and philosophical reasons. While these reasons may be traced through the written record (i.e. a lack of repair work or a lack of funds for improvement may be attributed to anti-war sentiment prevalent and widely discussed by the press and in folkloric songs, ballads, poems) through historical documentation (smaller budgets) the archeological record can confirm or deny--perhaps even highlight otherwise undocumented physical reactions to changes in the perception

of the role, purpose--even the importance--of the battery. Why was the battery slowly dismantled? Why, after 1887, was it used for salute purposes? The careful melding of historical and archeological data will doubtless answer the questions of why--and how. A sub-question relating to this category of examination would be "How does the history of this battery relate to the development and progression of American seacoast defense installation design and use?"

6. What can be learned about the life of the troops stationed at the battery site?

The unique nature of historical archeological research may allow for interesting new looks at the life of the soldier stationed at a seacoast defense installation on the West Coast during the period of the battery's use. Obviously, post records indicate absenteeism, disease, disciplinary problems, etc. The archeological record can indicate some response to boredom, fatigue, anger, as discussed in the section pertaining to site components. Food stuffs, liquors, personal items discovered may provide further insights.

7. Are there materials at the site pertaining to its earlier, domestic use?

If the question can be simply answered "yes," then a new series of questions, pertaining to the nature of the artifacts and their relationship to the domestic life of the mid-nineteenth century, status ascription, the acceptance of use of east coast items--or European items--on the west coast, and the identification of personal items as indicators of Fremont's "mind-set" could be asked. Until such items are found, these questions will remain unasked.

8. Can materials present in the archeological record be attributed to the recreational use of the site?

Obviously some items will be found that will be attributed to the recreational use of the site. What they reveal about the uses of the site--specifically--is another matter. What is recreational use? What types of "recreational" activities took place? Do recreational activities--or the concept of recreation--change, and are these changes traceable in the material record as represented archeologically? These questions will be posed if variant types of "recreational" use items are found. A lawn tennis item, for example, may well date to the earliest recreational uses of the site--particularly if it can be dated to the early decades of the twentieth century. A modern Coor beer can, on the other hand, could indicate the present stages of recreational use. The obvious evolution of use that springs to mind, then, is one of structured, ordered family recreation focusing on a well-defined "game" as the earliest phase, with free, unstructured relaxation while enjoying the view and a Coors is the latest stage. Then comes the obvious questions of why the change and what it means.



9. What portions of the battery were subjected to demolition--and why?

Some of these answers can be provided through the historical record. The 1901 construction of the pump station, the fire main installation, the powerhouse construction--can all be found in written records. Obviously, the actual damage can be found archeologically. Additional damage may well be found--holes cut for irrigation pipelines, powerlines, sewers--and can be added to the list. Why these changes were wrought is indicative of changing concepts of the importance of the battery and of the physical facilities or needs that brought about the demolition activities. Obviously, this question relates, in a large sense, to question number five. Demolition activity can be seen as a further physical (archeological) indicator of site change.

10. What have been the effects of burial on the battery structure?

This question has been basically answered by the scientific testing which found that the structure is deteriorating due to burial. The full scale excavation of the structure, and more detailed testing, may further quantify and explain that deterioration. What tapped ground water against certain portions of the battery? Have pipelines, waterlines, and lawns aided the deterioration? Detailed analysis of the deterioration on a large scale may aid in the quantification of data obtained from other sites where large scale testing may not be desired--or possible.

11. What remains of the 1898 battery's terreplein?

Removal of concrete foundations poured in the 1930s to create a garage at the site of the 1898 concrete battery near the Black Point Battery to facilitate site regrading after archaeological excavations are completed may impact the remains of an earlier, 1898 terreplein surface. Archeological testing will be needed to assess the presence, condition and nature of an 1898 terreplein.

12. Are secondarily deposited prehistoric materials present in the fill matrix?

Sand from the surrounding dunes on the post was apparently used to backfill portions of the Black Point Battery. Due to the proximity of prehistoric archaeological sites to the battery it is possible that prehistoric materials intermixed with the sand may have been secondarily deposited on the Black Point Battery site. Testing of the sand fill and a careful analysis of all lithic, faunal, and shell materials recovered during excavation should answer this question and if prehistoric materials are present hopefully determine their nature and characteristics.

The questions posed here have the potential for being answered as work progresses. Specific discoveries of certain types of artifacts--as posed in question number seven--will cause the formulation of new questions. Certain artifacts pertaining to the military use may pose more detailed questions about the evolution of firing equipment, gun carriages, the actual weapons, the projectiles. The



important factor, however, is that all questions require and will benefit from the interdisciplinary approach afforded by historical archeology. The proposed project cannot and will not be a historic sites archeological project, where the data obtained is analyzed particularistically to determine the physical characteristics of the battery. Throughout the project, the questions "why?" and "what does it mean?" will always be posed.

#### 4. Methodology

##### A. Excavation

The ultimate goal of the proposed project is the complete excavation of 50 percent of the battery. All of West Battery, with its attendant timber gun supports and shaped earthworks, will be exposed and stabilized. As stressed throughout this research design, this action is necessary to preserve the structure, which is threatened by deterioration brought about by the effects of burial. The East Battery will remain unexcavated. The demonstrated loss of integrity of the actual structure indicates that the effects of burial and the resultant deterioration cannot match the wide-scale destruction of the structure that has taken place. The archeological value of East Battery remains however, and will be preserved for future investigations, should they prove feasible and desirable.

While complete in nature, the excavation proposed for the West Battery will not be conducted as a single event. Rather, widely spaced trenches will be run along the length and across the battery walls to determine the nature and extent of the archeological resource. These units will be hand excavated, except in cases where hand excavation has shown a lack of cultural material. Power equipment will then continue the excavation under close and careful monitoring. Once these trenches are completed, hand excavation of all portions of the site directly adjacent the battery walls and behind them will be undertaken to carefully assess the original slopes of the earthworks and to preserve the fragile archeological remains of timber revetments and gun carriage supports. Standard units of five feet square size will be excavated. It should be stressed that the English System of measurement will be utilized rather than the Metric System inasmuch as this was the system utilized when the batteries were built and used and the imposition of the Metric System would prove meaningless. Each unit will be laid out in accord with established datum points and a baseline, all structural remains and artifacts will be plotted in relationship to the datum points. All hand excavated fill material will be sample screened. After these preliminary units and trenches are completed, and if no materials are encountered in the 1970s fill material or in the fill material behind the battery wall and against the cliff, careful machine excavation with a backhoe (which shall be constantly monitored) will commence. This excavation will stop within one foot of the terreplein (to be determined by the test trenches) and hand excavation of the remainder will proceed.

After careful graphic and photographic recording, all remnants of timber structures (revetments, gun platforms) will be removed to allow for the

installation of a drainage system to protect the walls. Drains will be installed below the walls and will run down the hill inside the trenches excavated in the superior slope during the preliminary work.

The site excavation methodology and approach are outlined in a subsequent document, the "Site Excavation Plan for the Black Point Battery" which is appended to this research design.

## B. Stabilization

Once the excavation of the battery walls is completed a trained mason, working under the supervision of the Park Historical Architect and the Park Archeologist, will commence the repairs of damaged or missing areas to insure proper drainage and the structural stability of the wall. Any replacement of bricks and/or mortar will be in-kind, utilizing historic techniques in accord with the guidelines specified in NPS-28 and in the Secretary of the Interior's Standards for the Rehabilitation of Historic Structures. All stabilization work will first be assessed and a report, outlining the scope and methodology of the repairs will be prepared. Recording of existing conditions before and after the stabilization work is undertaken shall be done. A final report will be prepared outlining all stabilization work.

At the same time the stabilization work is being completed the drainage system shall be installed. Drains will be installed at intervals beneath the walls and will be french drains leading to PVC drain pipes, which will then run down the hill. The actual placement of these drains has not yet been determined but will be included in the stabilization plan presented for review prior to this work commencing. Any additional excavation required for the installation of the drainage system will be conducted by archeologists.

This plan of action is in compliance with the recommendations of WACC Physical Scientist Elvia Niebla: "care must be given to insuring a sound foundation, repointing and protection from sea water salts." It also, hopefully, will resolve the problems of deterioration of the structure caused by the trapping of groundwater against the brick walls. A further recommendation of Niebla's will also be followed; inspection of the structure of at least six month intervals will be done to detect unforeseen detrimental factors.

## C. Conservation

The excavation of artifactual materials requires a professional commitment to conserve and preserve them. For that reason a field conservator will be attached to the project staff. Necessary procedures or steps required in the field to preserve artifactual materials will be undertaken. Guidelines followed will be provided from NPS Conserve-O-Grams, consultation with the Excavated Material Conservator, Harpers Ferry Center, Plenderleith, and consultation with the Park Registrar, the Regional Curator, Western Region and the Western Archeological and Conservation Center.

All artifacts recovered will be catalogued and selected artifacts will be photographed. Artifacts deemed as significant (after consultation with the Historian, Archeologist, Registrar, and Regional Curator) and requiring further conservation will be sent to Harpers Ferry for conservation or the services of a professional, competent conservator will be contracted for.

Artifacts will be integrated into Park Collections after consultation with the Park Registrar as an Archeological Field Collection. Significant or type examples may be accessioned individually for future retrieval.

#### D. Analysis and Presentation

An integral part of the proposed project will be the ultimate dissemination of the data obtained. Answers to the questions posed in this research design, physical characteristics of the significant battery, and the presentation of the methodological approach will be the subject of a detailed final site report prepared by the project staff under the general guidance and direction of the Regional Archeologist, Western Region. This report, which shall follow the guidelines proposed by the Airlie House report and NPS-28 with appropriate illustrations, maps, and photographs, will be reproduced for professional distribution to interested fellow professionals, the District Archeological Clearing House, NPS Archeologists and Historians, and WACC. Specialized presentations of data (i.e. history, types of artifacts, the stabilization program) may be presented in addition to the final report in professional or popular journal articles, papers, and presentations. The photographic record of site work will include 35mm color slides, which can be adapted for professional or public presentations.

The analysis of certain types of artifacts or material recovered is essential to the analysis of the data from the site. If required, specialized services, such as the identification of wood sample types, the variations in bricks, mortar components, the identification of military items, etc. will be contracted for by Golden Gate National Recreation Area. The reports of these analytical research activities will be appended to the final site report. The tightly controlled nature of the site (within an NPS area, fenced, and with a readily available police patrol) indicates that public exposure would not be detrimental. The values of public appreciation and support for the project would be great; therefore, consideration will be given to public tours of the site, media presentations, and a temporary exhibit concerning the site history, significance, and the archeological program. All media involvement will be closely coordinated and initiated by the Office of Public Affairs, Western Region, and the Public Information Officer, Golden Gate National Recreation Area.

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## APPENDICES

- A. Report on the Physical Deterioration of the Battery Structure (1982) by E. Niebla
- B. Cultural Resource Problem Statement GOGA C-21 for the Preservation of the Battery from the Approved Cultural Resource Management Plan for the Golden Gate National Recreation Area (1982)
- C. Site Excavation Plan (1983)



# United States Department of the Interior

NATIONAL PARK SERVICE

Western Archeological and Conservation Center

P.O. BOX 41058

TUCSON, ARIZONA 85717

IN REPLY REFER TO:

H30 (GOGA)

(WR)RCW

July 16, 1982

## Memorandum

To: Chief, Division of Structures Conservation

From: Physical Scientist, DISC

Subject: Fort Mason, Gun Battery--Brick Testing

### Introduction

The deterioration processes occurring within masonry of the buried gun battery take place in the presence of water. Moisture is the ultimate control variable in the prevention of deterioration. My memorandum of February 10, 1982, on Moisture Measurements made on Site of the Gun Battery at Golden Gate National Recreation Area definitely indicated presence of available water near the excavated battery walls. The purpose of this study was to determine the status of the deterioration processes. With this information a better decision can be made on the preservation procedure for the structure.

### Moisture A Deterioration Factor

There is no clear line of demarcation between different forms of soil water; however, to understand the effect of moisture in soils in a practical way classification schemes have developed. Water in excess of 0.1 to 0.2 bar suction is termed gravitational, occupies the larger soil pores and moves readily under force of gravity. Removal of this water can easily be achieved through proper drainage. Capillary water is held in smaller capillary size pores and exerts suctions of 0.1 to 31 bars. This water is said to be available to plant uptake up to a suction of 15 bars. Below 15 bars it is held so tightly by soil colloids that it is not available to plant growth; for preservation purposes it can also be assumed that it is not available for chemical reactions that actively accelerate material deterioration of buried structures. The water held at suctions valued greater than 31 bars is called hygroscopic and is essentially non-liquid since it is bound so tightly to soil solids.

Therefore, the two forms of water causing the most deterioration would be gravitational and capillary. Due to the rainfall in the area it is obvious that gravitational water would be present and at the very least proper drainage must be provided. As a result of the gravitational water it is also likely that the available water will be at a high percentage level. The results of the previous moisture determination indicate that it does have a high moisture percentage for the soil type.

If the area is landscaped for picnic purposes and the battery left buried, the deterioration processes will be accelerated. The optimum water content for plant growth is also optimum for material deterioration of the structure. Furthermore, fertilization for plant growth will cause an increase in salts which also contribute to deterioration processes. If preservation of the historic site is advocated, plant growth must be discouraged near the site.

#### Field and Laboratory Work

Samples were removed from the gun battery at three different sections of the wall at various depths. Samples BS-1 to 3 were taken at one section a foot apart in depth. Samples BS-4 to 7 and 12 were taken at the opposite end of the battery, also approximately one foot apart in depth. Samples BS-8 and 9 were taken from a section that had been exposed and reburied. Samples BS-10 and 11 represent the same area and treatment except that before they were buried they were removed from the wall and inverted. This was conjectured because the mortar on the brick was inverted.

For comparison, samples were taken from the same area but on a wall that has been exposed since 1909. This would indicate the degree of deterioration of the gun battery had it not been buried. Further comparative samples were taken from within Alcatraz Citadel to study the deterioration level of brick that hasn't been exposed to the environment for the past 50 years. Most of the Citadel samples were still in place on the wall but had been loosened as a result of expansion of iron hinge pins.

Tables 1 and 2 list the analytical results of the brick tests performed. One of the physical measurements was color, which showed no significant changes. The compressive strength of the bricks indicates the weight they may withstand before collapsing. It is evident that the samples from Ft. Mason were weaker than the samples from Alcatraz Citadel. Even though the number of samples was too small to run a thorough statistical analysis, the samples of the exposed wall were generally stronger than the samples from the buried gun battery. The permeability of these samples would indicate the tightness of the brick solids. The more permeable or porous, the higher the degree of deterioration. In general the samples from the gun battery appeared to be more porous than those at the Citadel. There was, however, no tangible difference between the exposed wall and the buried gun battery.

The two measurements of Effective Mean Pore Radius and Theoretical Capillary Rise were calculated from the permeability measurement. It was expected that the higher the permeability the larger the pore diameter and as a consequence the shorter the capillary rise. These measurements indicate the importance of having a good foundation to eliminate capillary water from entering the wall from the surrounding soil. The aggregate stability was measured to determine the susceptibility of the material to disintegration if wetted. The measurement is done by weight difference and is not very sensitive. The results indicate no real difference for all samples.

The Infra-red (IR) Spectrophotometer was used to determine the degree of chemical weathering. Attached is a report of Dr. Bruce Wachter's interpretation of the IR Spec results. The samples taken for these analyses were from 0.5-1 cm inside the face of the brick. The decision for the sampling technique of the brick was based on trying to get a uniformity in sampling methodology. For practical



purposes, surface sampling would have been extremely variable. However, in interpreting the results of the analysis it must be acknowledged that weathering could vary from the surface to 0.5 cm into the brick. The salt accumulation on the samples was minimal. The two factors that were detectable and could be related to deterioration were the hygroscopic (mineral) water and degree of crystallinity. It is tenuous to base decisions on crystallinity because it varies according to the degree of firing as well as a long term deterioration process. Water of hydration increases with corresponding natural deterioration processes. This would indicate a slightly higher chemical deterioration of the samples from Alcatraz Citadel.

#### Conclusions:

The physical analysis performed on the gun battery indicate a slightly higher degree of deterioration than bricks found exposed in the same site or at Alcatraz Citadel. The chemical analysis didn't produce any significant quantitative data. Thus, it would be safe to assume that the degree of deterioration between samples wasn't significantly different.

#### Recommendations:

If site is left unaltered, the least that should be done is to maintain good drainage. Access tubes have been installed which will help in monitoring moisture content. Because of the environmental conditions the site should be monitored and protected from excessive moisture. Vegetation growth in the area should be discouraged since the addition of water and fertilizers will encourage natural deterioration processes.

The analytical results do not indicate that excavation and exposure of the gun battery will be detrimental. Because of moisture in the soil this could be a positive action. In restoring the site care must be given to insuring a sound foundation, repointing and protection from sea water salts. An inspection cycle of at least six-month intervals would be recommended initially to detect unforeseen detrimental factors.



Elvia E. Niebla

Enclosure

## CULTURAL RESOURCES PROJECT STATEMENT

### PARK AND REGION:

Golden Gate National Recreation Area, Western Region

### PROJECT NAME AND NUMBER:

Archaeological Excavation and Restoration, Civil War Battery, Fort Mason, GOGA, C-21.

### STATEMENT OF PROBLEM:

The only surviving example of a temporary Civil War battery on the West Coast is a currently buried series of brick and earthwork fortifications at Fort Mason. Burial of the battery in or around 1900 has created several problems with water impregnation of the bricks, an increase in the chloride content of the earth and brick, and subsequent deterioration. There is also a lack of detailed knowledge concerning the construction characteristics and the integrity of the battery. A thorough archaeological examination of the battery is needed and the exposure and restoration of the brick and earthworks necessary for the preservation of this rare and significant resource.

### WHAT HAS BEEN DONE:

A preliminary archaeological investigation was undertaken in early 1982 by park staff. Portions of the battery were exposed and the condition of the brick and the construction characteristic of those portions assessed.

### PROJECT DESCRIPTION:

Hand-excavation and supervised machine excavation by archaeologist to expose and document remains of the organic materials used in the battery construction as well as the extant portions of the brick construction. Restoration of the original battery structure by repair of broken brick sections, replacement of wooden doors and wall facings, restoration of original superior slope of the earthworks, sodding, and eventual replacement of a period weapon, a 10-inch Columbiad (rodman gun) on a wooden barbette mount.

### DURATION:

Approximately three months to excavate and prepare final report, five months for restoration utilizing a team of ten archaeologists, one historian, one historical architect and a landscape architect.

#### IMPACT OF NON-IMPLEMENTATION:

Deterioration of the battery structure will continue. The public will be denied access to and an understanding of a unique cultural resource on the West Coast. Better understanding of the construction techniques and use of this type of fortification cannot be obtained by scholars.

#### ALTERNATIVES:

- a. No action.
- b. Expand park function to undertake necessary work.
- c. Engage volunteers to undertake necessary work with NPS input and supervision.

#### ADMINISTRATION AND LOGISTICS:

Either recommended course of action (b and c) involves a commitment of funds for personal services. It is assumed that a volunteer effort utilizing the local University's senior archaeology students can perform the necessary excavation work under NPS supervision and that the park can presently fund, as part of the regularly assigned duties of the Park Historian, Historical Architect, Archaeologist, and Landscape Architect, the necessary plans for restoration of the battery site and structures. Supplies such as lime mortar, replacement bricks, wood, and some hardware will be required.

<u>FUNDING:</u>	<u>Year in Program Sequence</u> 1st
Personal Services	7,500
Supplies, Report, Stabilization Treatment	15,000
TOTAL	22,500
Funds Available in Park Base	7,500
Funds Requested from Region	15,000

<u>On Form</u>	<u>Date Submitted</u>
10-237	
10-238	
10-250	
10-451	

REFERENCES: Delgado, Mayer, and Bennett 1982.

SITE EXCAVATION PLAN FOR BLACK POINT BATTERY  
1983 FIELD SEASON

Gregory J. Brown

The 1983 field season at Black Point Battery will consist of eight weeks of intensive excavation aimed at completely excavating the rest of the battery. At the end of this period it should be permissible to proceed with restoration plans knowing that the important archaeological information has been gathered.

Crew and Timetable. The 1983 field crews will consist of fifteen YCC laborers aged 15-18, two YCC crew leaders, and three trained archaeological field supervisors. Each field supervisor will be assigned a crew of five YCC laborers and will be responsible for training and supervising them in both field and lab duties. In general there will be two crews in the field in any given week, while the other one is in the lab cleaning and processing recovered artifacts.

The field season will begin on July 5 and continue through August 26. The field supervisors will begin working two days earlier, on June 30, and continue until September 1. The YCC crews will work six hours per day Monday-Thursday, while the field supervisors will work eight hours per day Monday-Friday. When not supervising crews the field supervisors will be involved in various special field activities (monitoring demolition of concrete, etc.) or in laboratory analysis of artifacts.

Research Questions. This season of excavation is directed toward answering a set of specific questions generated by historic research and by last season's excavation. These are the following:

- (1.) What is the nature of the fill used to support the concrete floor? Where did it come from? How thick is it?
- (2.) When was the concrete floor constructed? (determined from artifacts in sub-floor fill-- terminus post quem)
- (3.) What is the terreplein made of? How was it constructed? Over how much of the site was it present?
- (4.) What is the construction history of the wall and terreplein surface? Are there earlier construction surfaces below the terreplein itself?
- (5.) Were there disturbances (fire pits, collapsed walls, etc.) in the terreplein before it was covered with fill?
- (6.) How far did the superior slope extend vertically and horizontally? Was the same material used beyond the exterior crest as on the top? Is there a difference in the thickness of the upper dark layer?

- (7.) Where did the sub-slope fill come from? Are there datable artifacts in this fill?
- (8.) How did the construction of the powerhouse, fuel tank, etc. affect the material remains of the battery? Are there construction trenches? What is the extent of the pristine terreplein surface in this area? Is there artifact mixture in the disturbed areas and can these artifacts be correctly assigned to their proper time period?
- (9.) What is the structure of the pintle support system? Are there any remnants?
- (10.) What is the structure of the traverse rail support system? Are there any remnants?
- (11.) How are artifact positions correlated with structural and non-structural features? In which of the gun pits are various artifact classes most numerous?
- (12.) Are there any remnants of revetment timbers? How were the revetments supported?
- (13.) What is level VIc (black sand/humus?) actually composed of? Is it present only near certain ready magazines? How can it be interpreted?
- (14.) What is the exact sequence of abandonment of the ready magazines? Did the roofs rot away or were they intentionally collapsed? Were all ready magazines emptied before their doors were bricked up?
- (15.) Will the excavation of the battery turn up any remnants of Bateria San Jose (1797-1835) or prehistoric sites 4-SFr-29, 4-SFr-30, or 4-SFr-31? Are these remnants in disturbed contexts or do they indicate that any of these sites actually overlapped part of the battery?
- (16.) How much is left of the 1898 Battery and/or Building S243? How did these constructions affect the material remains of Black Point Battery?

Other questions will of course be raised during the excavation season as unexpected discoveries are made. The research design must be flexible enough to allow for investigation of these discoveries. New information may lead to the alteration of the expected percentage of excavation for each stratum or location. Such changes, however, will be carefully made based on a day-to-day re-evaluation of excavation results.



Excavation Plan. The following excavation plan is proposed for the battery. The order of field tasks represents the sequence in which these tasks will be accomplished.

- (1.) Cutting of weeds and grasses to facilitate surface collection of superior slope and concrete in front of wall. Also involves clearing of remaining fill in places on top of the concrete. Recording of all finds by unit and level, taking note of whether they appear in disturbed or undisturbed contexts. Week 1.
- (2.) Hand or backhoe excavation of fuel tank pit to establish stratigraphy of site in front of wall. This involves re-excavation of a 15-20 foot long backhoe trench dug in the 1982 field season and backfilled. Week 1.
- (3.) Careful hand excavation of top of wall and edge of superior slope to establish characteristics of revetments. Excavation of units within 1-2 feet of wall. Week 2.
- (4.) Trenches across superior slope in order to determine depth of various levels, their composition, etc. Continuation of Trench B and digging of two other trenches down past exterior crest. Week 2.
- (5.) Cross-trenches in front of wall through concrete to determine location of terreplein and possible disturbances. Two trenches each 5 feet wide running from wall to cut bank on south side of site. Week 3.
- (6.) Hand excavation around powerhouse before foundation is demolished to determine construction trenches and extent of disturbance. Week 4.
- (7.) Hand excavation of units in front of wall below concrete to reach terreplein surface. Beginning with excavation of all units in at least two gun pits (checkerboard fashion), followed by the excavation of all units in some or all of the other four gun pits. Weeks 4, 5, 6, 7.
- (8.) Hand excavation of ready magazine 10/11 (and possibly 8/9 and 11/12) to determine exact sequence of abandonment and filling. Excavation to establish as well whether any material was left in the magazines. Weeks 5-8 (variable).
- (9.) Hand excavation of test trench or units under Building S243 to determine the nature of disturbance. Units may contain remnants of prehistoric site 4-SFr-30. Week 8.
- (10.) Hand excavation of test trench or units under 1898 Battery to determine the nature of disturbance. Units may contain remnants of prehistoric site 4-SFr-30. Week 8.

